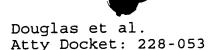


<u>CLAIMS</u>

- 1. A virion-constrained nanoparticle comprising a shell of a virion coat protein surrounding a nanoparticle of non viral origin.
- 2. The virion-constrained nanoparticle according to claim 1, wherein said nanoparticle of non-viral origin comprises a material selected from the group consisting of organic, inorganic and organo metallic materials.
- 3. The virion-constrained nanoparticle according to claim 2, wherein said nanoparticle of non-viral origin comprises an inorganic material.
- 4. The virion-constrained nanoparticle according to claim 2, wherein said nanoparticle of non-viral origin comprises an organic material.
- 5. The virion-constrained nanoparticle according to claim 2, wherein said nanoparticle of non-viral origin comprises an organo-metallic material.
- 6. The composition according to claim 1, wherein said virion coat protein is selected from the group consisting of eukaryotic, prokaryotic, fungal, algal and protozoan virion coat proteins.
- 7/ The virion-constrained nanoparticle according to claim 6, wherein said virion coat protein is a eukaryotic virion coat protein.



- 8. The virion-constrained nanoparticle according to claim 7, wherein said virion coat protein is a plant virion coat protein.
- 9. The virion-constrained nanoparticle according to claim 8, wherein said virion coat protein is cowpea chlorotic mottle virus coat protein.
- 10. A process for the production of virion-constrained nanoparticles comprising:
- a) providing an isolated and substantially pure coat protein(s) of a virion;
- b) incubating said coat protein(s) in solution under conditions that permit re-assembly of a virion capsid;
- c) mixing the re-assembled virion with one or more materials selected from the group consisting of organic, inorganic and organo-metallic materials, under conditions that entrap said material to provide virion-constrained nanoparticles surrounded by said virion coat protein; and
- d) isolating the virion-constrained nanoparticles so produced.
- 11. The process according to claim 10, wherein the mixing in step c) is under conditions that provide for controlled gating.
- 12. The process according to claim 10, further comprising:
- e) releasing the nanoparticle material through controlled gating.
- 13. A process for producing virion-constrained nanoparticles comprising:

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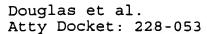


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- a) providing an isolated and substantially pure coat protein(s) of a virion;
- b) incubating said coat protein(s) in a solution comprising one or more materials selected from the group consisting of organic, inorganic and organometallic materials, under conditions that permit assembly of a virion and permit said virion to entrap said material and to provide virion-constrained nanoparticles surrounded by said virion coat protein; and
- c) isolating the virion-constrained nanoparticles so produced.
- 14. The process according to claim 13, wherein the incubating in step b) is under conditions that provide for controlled gating.
- 15. The process according to claim 13, further comprising:
- d) releasing the nanoparticle material through controlled gating.
- 16. A process for producing virion-constrained nanoparticles comprising:
- a) providing isolated and substantially pure virions devoid of viral nucleic acid;
- b) incubating said virions in a solution comprising one or more materials selected from the group consisting of organic, inorganic and organometallic materials, under conditions that permit said virion to entrap said material to provide virion-constrained nanoparticles surrounded by said virion; and
- c) isolating the virion-constrained nanoparticles so produced.

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The process according to claim 16, wherein 15 the incubating in step b) is under conditions that provide for controlled gating.

- 18. The process according to claim 16, further comprising:
- releasing the nanoparticle material through controlled gating.
- The process according to claim 8, further comprising:
- dis-assembling said virion capsids to provide free capsid subunits and free nanoparticles of core material; and
- isolating the free core nanoparticles so produced.
- 20. The process according to claim 10, wherein said coat/protein(s) of a virion is cowpea chlorotic mottle virus coat protein.

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